

Confirmed occurrence of *Oeneis jutta* in the Altai mountains (Russia) with description of a new subspecies (Lepidoptera: Nymphalidae, Satyrinae)

Aleksei G. Belik & Roman V. Yakovlev

Abstract. Confirmed occurrence of *Oeneis jutta* in the Altai mountains (Russia), with description of a new subspecies (Lepidoptera: Nymphalidae, Satyrinae)

The presence of *Oeneis jutta* (Hübner, [1806]), in the Altai mountains is confirmed for the first time since 90 years; a single literature record (Meinhard 1910) was hitherto considered doubtful. *Oeneis jutta akoene* ssp. n. is described from the Ukok plateau, south-east Altai mountains. It differs well from all known Palearctic forms of this species. A detailed description and differential diagnosis of the new subspecies is given; its distribution and ecology are discussed.

Samenvatting. Bevestiging van het voorkomen van *Oeneis jutta* in het Altai-gebergte (Rusland), met beschrijving van een nieuwe ondersoort (Lepidoptera: Nymphalidae, Satyrinae)

De aanwezigheid van *Oeneis jutta* (Hübner, [1806]) in de Altai wordt bevestigd. Er waren geen betrouwbare vermeldingen van deze soort uit de Altai gedurende de laatste 90 jaar; de enige vermelding (Meinhard 1910) werd steeds als zeer twijfelachtig beschouwd. Van het Ukok plateau, Zuidoost-Altai, wordt *Oeneis jutta akoene* ssp. n. beschreven. Deze ondersoort verschilt van alle bekende Palearctische vormen van de soort. Een gedetailleerde beschrijving en differentiaaldiagnose worden gegeven, en de verspreiding en ecologie worden besproken.

Résumé. Confirmation de la présence de *Oeneis jutta* dans les monts Altai (Russie) avec description d'une nouvelle sous-espèce (Lepidoptera: Nymphalidae, Satyrinae)

La présence de *Oeneis jutta* (Hübner, [1806]) dans les monts Altai est confirmée pour la première fois depuis 90 ans; une seule mention dans la littérature (Meinhard 1910) était considérée comme douteuse jusqu'à présent. *Oeneis jutta akoene* ssp. n. est décrite du plateau d'Ukok, dans le sud-est des monts Altai. Cette sous-espèce diffère nettement de toutes les autres formes paléarctiques connues de l'espèce. Une description détaillée avec diagnose différentielle est donnée, et la répartition et l'écologie de l'espèce sont discutées.

Резюме. Подтверждение наличия *Oeneis jutta* в Горном Алтае (Россия) с описанием нового подвида (Lepidoptera: Nymphalidae, Satyrinae)

Показано обитание на территории Горного Алтая *Oeneis jutta* (Hübner, [1806]), наличие которого здесь в течение последних 90 лет не подтверждалось, а единственное указание в литературе (Meinhard 1910) подвергалось сомнению. С плоскогорья Укок, расположенного на юго-востоке Горного Алтая, описывается *O. jutta akoene* ssp. n. Новый подвид хорошо отличается от всех известных в Палеарктике форм *O. jutta*.. Даны детальное описание и дифференциальный диагноз нового подвида, обсуждаются его распространение и экология.

Key words: Lepidoptera – *Oeneis jutta akoene* ssp. n. – Ukok plateau – Altai mountains – Russia.

Belik, A. G.: P. O. Box 2108, RU-410049 Saratov 49, Russian Federation.

Yakovlev, R. V.: Chkalov street, 57, apt. 81, RU-656099 Barnaul 99, Russian Federation.

Introduction

The presence of *Oeneis jutta* (Hübner, [1806]), that is widely distributed throughout the northern Palearctic, in the mountainous Altai area was not substantiated up to the present, despite numerous entomological expeditions to the area since the end of the 19th century and numerous publications dedicated both generally to the lepidopteran fauna (of the Altai, Asiatic Russia or the whole ex-USSR) and, more specifically to the systematics and distribution of species of the genus *Oeneis* Hübner, [1819] (Elwes & Edwards 1893; Elwes 1899; Groß 1970; Korshunov 1972; Korshunov & Gorbunov 1995; Korshunov 1996; Kurentzov 1970; Lukhtanov 1987; Tuzov et al. 1997).

There was only a single, little known, literature record (Meinhard 1910) for the Bukhtarma river valley etc. (south-eastern Altai), based on collected material (for details see under *Notes on ecology and distribution* below). All subsequent indications of *O. jutta* for the Altai mountains were based on Meinhard's report (Standel 1957; Murayama

1973; Tuzov 1993, V. Tuzov, pers. comm. to A. Belik). Lukhtanov (1987) considered Meinhard's record as insufficiently reliable, partly because of lack of new records and material of *O. jutta* from the Altai for almost a century and partly because Meinhard's article comprises many errors and inaccuracies, and the more contains some evidently incorrect determinations. For example, a record of "*Erebia tristis* Brem[er, 1861] (*wanga* Brem[er, 1864])" for the Altai is quite impossible for this endemic far-eastern species (closer examination revealed these specimens to belong to *E. edda* Ménétriés, 1851, cf. Wnoukovsky 1930).

However, the territory of the Altai has been explored quite unevenly, mostly because of travel difficulties. While areas adjacent to the Chuya Highway (Chuyskiy Trakt) have been explored more or less well, some remote parts of the Altai were never visited by entomologists. Recently, a single specimen of *O. jutta* was found in the northern Altai (Lukhtanov & Lukhtanov 1994), but it was impossible to judge its subspecific identity nor details of its distribution in the Altai (V. Lukhtanov pers. comm. to A. Belik).

The Ukok plateau is a remote isolated highland area situated in the south-eastern corner of the Altai mountains, adjacent to the Mongolian Altai mountains. The Ukok is rather well separated from other parts of the Altai by surrounding high mountain ranges on each side: to the north it is cut off by the Katunskiy and Yuzhno-Chuyskiy mountain ranges, to the east by the Saylyugem range, to the south by spurs of the Yuzhnyy Altai range and by the Tavan-Bogdo-Ola (Tabyn-Bogdo-Ola, Tavan Bogd Uul) range, to the west by spurs of the Katunskiy, Listvyaga and Yuzhnyy Altai ranges.

Since 1994, R. Yakovlev has started yearly lepidopterological expeditions into the south-eastern Altai and has visited the Ukok plateau for the first time. In 1995, during his second visit, he found two isolated populations of *Oeneis jutta* and has collected relatively short series of males. These specimens turned out to be strikingly different from all hitherto known Palaearctic forms of *O. jutta*. But more extensive series including females were necessary to decide with certainty whether it is a new species-group taxon or just an individual form. So further attempts were undertaken by R. Yakovlev, and in the summer of 1997 additional material was collected. Unfortunately, these specimens were rather worn because of hot dry weather and, therefore, of untimely adult emergence. Nevertheless, the available series of specimens of *O. jutta* from the Ukok plateau allowed the authors to conclude that they really represent a peculiar species-group taxon, described below as a new subspecies.

Oeneis jutta akoene ssp. n.

Type material. Holotype ♂, Russia, Altai Mts., Ukok plateau, 6 km SE of Belyashi (Dzhazator) village, mouth of Kudabay river valley, 1300–1600 m, 25.VI.1995, R. V. Yakovlev leg. Paratypes 21♂ 40♀: 4♂, same locality and date as holotype; 5♂, same locality as holotype, 1–3.VII.1995; 2♀, same locality as holotype, 4.VII.1995; 1♂, same locality as holotype, 24.VI.1997; 8♂ 38♀: Russia, Altai Mts., Ukok plateau, 34 km SSE of Belyashi (Dzhazator) village, middle stream of Akalakha river, vicinity of winter lodge Maypak, 1–2 km W of the mouth of Karabulak river, 2200–2400 m, 29.VI.–3.VII.1997; 3♂, same data but 27.VI.1995; all paratypes R. V. Yakovlev leg.

Holotype ♂ and 1 paratype ♀ deposited in the Zoological Institute of the Russian Academy of Sciences, St.-Petersburg. One pair of paratypes (♂ and ♀) deposited in the Zoological Museum of the Moscow University, Moscow. One pair of paratypes (♂ and ♀) deposited in the Siberian Zoological Museum at the Institute of Animal Systematics and Ecology, Siberian Branch of RAS, Novosibirsk. The remaining paratypes are deposited in the authors' collections.

Description

Male (plate, figs. 1–6). Average forewing length 26.4 mm (range 25.0–27.0 mm); forewing length of the holotype 27.0 mm.

Forewing upperside: ground colour brown or greyish brown, of various shades; submarginal ochreous yellow spots very well defined and usually fused into a

submarginal band, that contrasts strongly with the ground-colour, usually looking like a series of ovate spots separated by thin ground-colour lines along the veins, in many specimens most noticeably along M_3 ; it has (usually) three to (rarely) five, most often blind, black ocelli (ocellus in M_1 – M_2 sometimes with tiny light pupil), ocelli in M_1 – M_2 and Cu_1 – Cu_2 most prominent and usually of equal size, ocellus in M_3 – Cu_1 often smaller, sometimes there are ocelli-like black dots in R_5 – M_1 and in M_2 – M_3 ; sex brand well developed; fringes white chequered with black.

Hindwing upperside: ground-colour as in forewing; like in forewing, well developed submarginal ochreous yellow spots usually forming a distinct band crossed by dark lines of ground colour along veins; it has from one to three ocelli, usually two, that are black and usually blind; ocellus in Cu_1 – Cu_2 most developed and always present, sometimes centred with white pupil; ocellus in M_3 – Cu_1 much smaller in size, often reduced to black dot, sometimes completely missing, but rarely with white pupil; occasionally, a third ocellus in the form of a black dot in space Cu_2 –2A may occur; fringes as in forewing.

Forewing underside: ground-colour greyish brown, paler than upperside; costal margin and area near wing apex of the same coloration as hindwing underside, i.e. dark brown mottled with white scales; submarginal pale ochreous yellow band corresponding to that on the upperside but not so sharply outlined, usually having diffuse borders; submarginal ocelli corresponding to those on the upperside but somewhat smaller in diameter; as a rule, there are two ocelli in M_1 – M_2 and Cu_1 – Cu_2 , in some specimens an extra ocellus in M_3 – Cu_1 , rarely only one ocellus in M_1 – M_2 present; ocelli with white pupil, always in M_1 – M_2 , mostly in Cu_1 – Cu_2 : when well developed, the ocellus in M_3 – Cu_1 may also be white-pupilled.

Hindwing underside: resembling that of *O. norna altaica* Elwes, 1899 rather than other forms of *O. jutta*; ground-colour dark brown, heavily mottled with white scales; wing more or less divided into four areas of different coloration, i.e. marginal, submarginal, medial and basal; narrow marginal band least distinctive, of greyish appearance because of strong white mottling; submarginal area corresponding to ochre yellow submarginal band of upperside dark brown, heavily mottled with white, of a more brown appearance than marginal band because of slight ochreous shade, always with a white-pupilled distinct black ocellus in Cu_1 – Cu_2 ; broad medial band usually sharply outlined, dark brown and with much less white mottling than other wing areas; marginal band outwardly and inwardly more or less bordered by white scales, strongly contrasting in some specimens; basal area paler than medial band, dark brown with strong white mottling, similar to submarginal area but without ochreous tinge.

Body black, covered with brownish black hairs.

Antennae dorsally dark brown with light brown club, ventrally light brown.

Genitalia: characteristic *O. jutta* structure (cf. Groß 1970: Abb. 5, B1, B2, B4, B518; Lukhtanov 1987: figs. 3–5), without significant differences.

Female (plate, figs. 7–12) Average forewing length 27.2 mm (range 25.5–28.0 mm).

Forewing upperside: ground-colour brown; ochreous yellow submarginal band very distinct, sharply outlined and wide, about one-third of wing width, uninterrupted in most extensively marked specimens or intersected with thin brown lines along veins, especially along M_3 in some specimens; band containing from three to six black blind ocelli; ocelli in M_1 – M_2 , M_3 – Cu_1 and Cu_1 – Cu_2 large and always present, first two of these of almost equal size, third one often smaller; many specimens with small ocelli or black spots in R_5 – M_1 , M_2 – M_3 and sometimes in Cu_2 –2A; fringes white, chequered with black.

Hindwing upperside: ground-colour as in forewing; ochreous yellow submarginal band always well developed, up to one third of wing width, containing black ocelli from one (not often) through two (most commonly) up to five (rarely); ocellus in Cu_1 – Cu_2

always present, that in M_3 - Cu_1 usually smaller if present; additional black dots might occur in M_1 - M_2 , M_2 - M_3 and 2A-3A.

Forewing underside: as in male in general appearance, light submarginal band more sharply edged; as a rule three ocelli in M_1 - M_2 , M_3 - Cu_1 (absent in some specimens) and Cu_1 - Cu_2 , rarely also with black dots in M_2 - M_3 and Cu_2 -2A; in most cases ocelli in M_1 - M_2 and Cu_1 - Cu_2 white pupilled, ocellus in M_3 - Cu_1 also white pupilled when present.

Hindwing underside: as in male, though dark medial band looking somewhat paler (this might be just because most females studied were worn).

Body and antennae: as in male.

Differential diagnosis. All known Palaearctic forms of *O. jutta* are rather uniform in wing pattern and coloration, having but slight differences. As stated by Lukhtanov (1987), geographical variation is largely overshadowed by extensive individual variation within each population.

A detailed revision of subspecific forms of *O. jutta* is beyond the scope of the present paper, but some notes seem appropriate in the present context. It appears likely that the range of *O. jutta jutta* (Hübner, [1806]) (type locality: "Lapland") stretches from Norway to the Baikal, at middle latitudes. Specimens from populations of the Baltic (Estonia, Latvia, Lithuania), the St.-Petersburg region and Belarus are generally paler and somewhat smaller than in Scandinavia, but there are no critical differences from Scandinavian specimens. Among populations from north-eastern European Russia, two subspecies have been distinguished: *O. jutta timanica* Sedykh, 1977 (type locality: "vicinity of Ukhta township") and *O. jutta kryzhanowskii* Sedykh, 1977 (type locality: "Polar Ural"). The first apparently should be identified as a synonym of the nominotypical subspecies because of lack of any significant differences from it while the second might be retained, being very small, having a very dark blackish brown ground-colour on the upperside and dark ochreous brown or reddish brown submarginal spots, a very dark forewing underside with only weak traces of submarginal spots, a vivid, generally blackish or grey hindwing underside with contrasting black medial band. There is, however, a certain chance that it represents just an ecological form, peculiar to the polar region with its inclement climatic conditions, because specimens from the Polar Ural are somewhat similar to those from north-western Chukotka (same latitude) in size and wing upperside coloration and maculation, though the coloration of the hindwing underside in these populations is significantly different (see below).

A population from the Central Ural has been described as *O. jutta gigantea* Austaut, 1911 (type locality: "Oural central, aux environs de Sojmonowsk") because of large size and vivid coloration, but similar specimens are common in Norway and Sweden. The first author has checked series of *O. jutta* from the vicinity of Yekaterinburg (=Sverdlovsk) (located in Central Ural) in coll. A. V. Tsvetaev (Zoological Museum of Moscow University) and absolutely no significant differences were found, when compared to material of the nominotypical subspecies. So, almost certainly, *O. jutta gigantea* should be synonymized with *O. jutta jutta*.

Specimens from eastern Siberian populations, east of the Baikal, are quite similar to the nominotypical subspecies, but have one distinct character on which basis they were described as *O. jutta sibirica* Kurentzov, 1970 (type locality: "interior areas of Yakutia and of Magadan region"); i.e. the dusk uniform grey colour of the hindwing underside, so the medial band is of the same colour and therefore often almost invisible. Tiny short lines, that speckle the hindwing underside in *O. jutta jutta* and make it look mottled, are strongly reduced in *O. jutta sibirica*, making the hindwing underside appearing as uniform grey. Nevertheless, occasionally it is almost impossible to distinguish specimens of *O. jutta jutta* and *O. jutta sibirica*, e.g. those from Norway and lower Amur!

Specimens of *O. jutta* from north-western Chukotka have a very dark uniform hind-wing underside, often more blackish than grey, but there is strong evidence of clinal variability towards *O. jutta sibirica*. Adequate comparative material from intermediate areas should be studied before one can decide whether Chukotkan populations deserve subspecific rank. This is a task for the future student generations, considering the immense, yet inaccessible territory of the Russian Far Northeast and hence the scarcity of material from there.

Populations of *O. jutta* inhabiting Sakhalin Island are known as *O. jutta sachalinensis* Esaki, 1924. Based upon Kurentzov's description and figure (Kurentzov 1970), on Murayama's figure (1973) and on a few specimens available to the authors, it shows but little difference from continental Siberian populations. Moreover, Kurentzov (1970) has stated that *O. jutta sachalinensis* is distributed in the north-eastern Amur area and in northern Korea. Judging from the picture in Lee (1982), North Korean *O. jutta* bears no remarkable differences from East Siberian specimens, at least on the wing upperside.

O. jutta akoene ssp. n. clearly stands out against this background of quite similar Palaearctic forms of the species, differing from all above mentioned subspecies in two main features.

First, it has very well developed and clear-cut submarginal bands. In some rare specimens of other *O. jutta* subspecies, the submarginal bands are developed to the same extent, but they have more or less diffuse borders, especially towards the outer margin of the forewing. Furthermore, in all males of *O. jutta akoene* the submarginal band on the forewing extends into Cu_2-2A , while in most males of the other subspecies this band ends in Cu_1-Cu_2 and only in rare cases enters Cu_2-2A . On forewing underside the submarginal band is also well developed in *O. jutta akoene*, while in other subspecies there are only very diffuse submarginal spots. In most male specimens of *O. jutta akoene* there is a large ocellus in Cu_1-Cu_2 on the hindwing upperside, while in males of other subspecies this ocellus usually is less developed, often just as a small black dot.

The second main distinction of *O. jutta akoene* from other subspecies is the hind-wing underside coloration. While in all forms of *O. jutta* it is of various shades of grey, in the new subspecies it is of a brownish colour, caused by the presence of many light brown scales. The hindwing underside of other subspecies is covered with dark blackish brown and light silvery grey scales, resulting a general grey appearance. As mentioned in the description above, the hindwing underside of *O. jutta akoene* resembles more that of *O. norna altaica* than that of the known subspecies of *O. jutta*, because of its brownish colour and the always well developed white-pupilled ocellus in Cu_1-Cu_2 .

Notes on ecology and distribution

O. jutta akoene inhabits swampy spots with sparse growth in the larch taiga of the Ukok plateau. This is the usual habitat for *O. jutta* in Siberia, but larch forests at the Ukok plateau are growing under extreme ecological conditions and from this viewpoint habitats of *O. jutta* there are uncommon, if not to say unique. It is also worth mentioning that *O. jutta akoene* is the most high-altitudinal subspecies of *O. jutta*, occurring up to at least 2400 m.

By its environmental conditions, the Ukok is a quite arid region with prevalent dry mountain steppe over the plateau areas. Larch taiga grows here only along the lower course of the Dzhazator river. Further south and south-east there are only small larch groves near rivers, e.g. nearby the Akalakha river in its middle course. These moist larch groves look pretty like oases on the background of dried mountain semi-desert steppe, so only a few habitats appear suitable for *O. jutta*. This probably explains the fact that populations of *O. jutta akoene* in the Ukok plateau are not abundant and extremely

localised. During four years of collecting in Ukok, the second author found only two populations despite of extensive exploration throughout the territory.

More strange is the fact that *O. jutta* is almost entirely absent from the territories of the Altai north of Ukok, where more suitable ecological conditions seem to exist over big areas of larch taiga (a single known exception is a record from the northern Altai, cf. Lukhtanov & Lukhtanov 1994). Instead, *O. magna dubia* Elwes, 1899 occurs here in abundance. A hypothesis of competitive behaviour of these two closely related species might be advanced, though certain facts contradict such an assumption. *O. magna* Graeser, 1888 prefers drier habitats than *O. jutta*. In eastern Siberia, *O. magna* occurs in more or less dry mixed larch-birch forests. In many regions of eastern Siberia, where such mixed forests do not grow and only larch taiga is found, *O. jutta* and *O. magna* coexist in the same habitats, though occupying different sites: *O. jutta* lives in swampy spots while *O. magna* inhabits drier areas.

^
J

Legend of colour plate

Fig. 1. *Oeneis jutta akoene* ssp. n. holotype male, upperside. Russia, Altai Mts., Ukok plateau, 6 km SE of Belyashi (Dzhazator) village, mouth of Kudabay river valley, 1300–1600 m, 25.VI.1995, R. V. Yakovlev leg.

Fig. 2. *Ditto*, underside.

Fig. 3. *Oeneis jutta akoene* ssp. n. paratype male, upperside, same label data as for fig. 1.

Fig. 4. *Ditto*, underside.

Fig. 5. *Oeneis jutta akoene* ssp. n. paratype female, upperside. Russia, Altai Mts., Ukok plateau, 34 km SSE of Belyashi (Dzhazator) village, middle stream of Akalakha river, vicinity of winter lodge Maypak, 1–2 km W of the mouth of Karabulak river, 2200–2400 m, 29.VI.–3.VII.1997, R. V. Yakovlev leg.

Fig. 6. *Ditto*, underside.

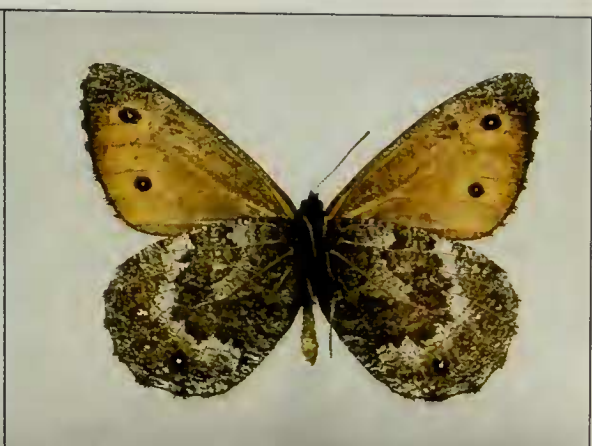
Fig. 7. *Oeneis jutta akoene* ssp. n. paratype female, upperside, same label data as for fig. 5.

Fig. 8. *Ditto*, underside.

Plate 1



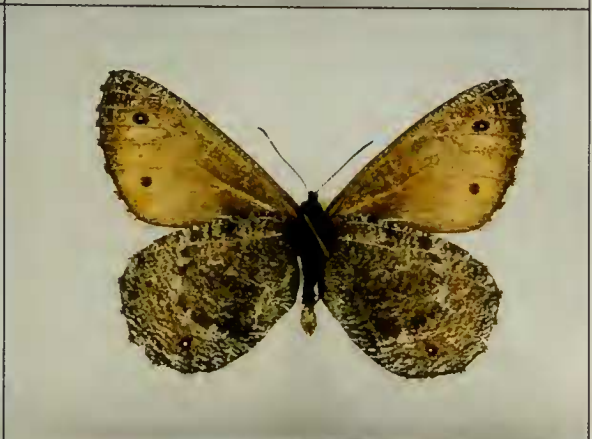
1



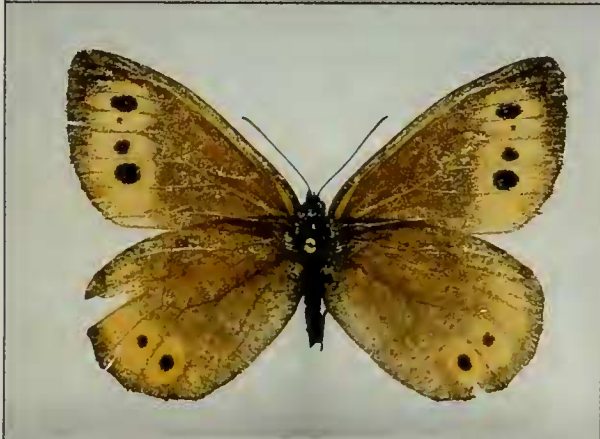
2



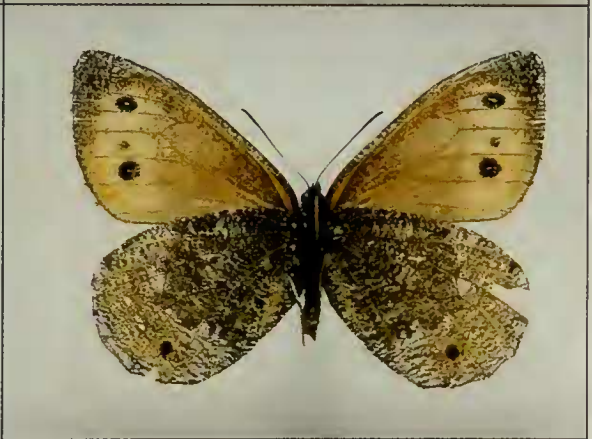
3



4



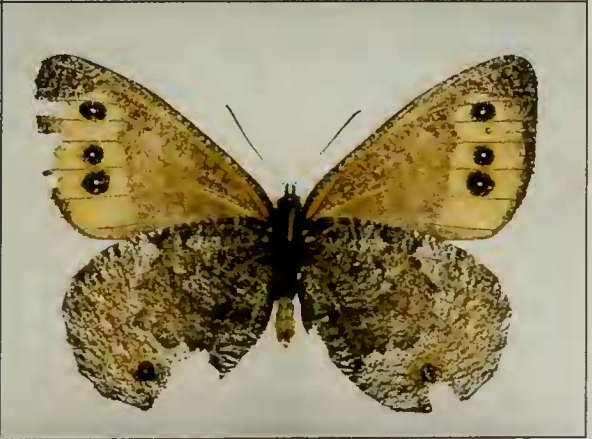
5



6



7



8

The main distribution area of *O. jutta akoene* apparently lies further south and south-east in the Mongolian Altai mountains, which remain almost unexplored. So, the north-western limit of its distribution lies in the south-eastern Altai. Based on this evidence, the only known previous record of *O. jutta* from the Altai Mountains (Meinhard 1910), which was considered doubtful, should be accepted as true. A quotation (translated from Russian) of Meinhard's paper (original format and punctuation retained) is given below:

“72. *Oeneis jutta* Hb. (48–52 m.m.) 5 specimens, No.No. 482–486.
Altai,– Kendykty Kul' (22 VI.1905), Bukhtarma valley (21 VII.1905).
Mongolia – Ulegem valley (2 VI. 1906).”

Comments

In the introduction to his article, Meinhard briefly described the itinerary of Prof. Sapozhnikov's expeditions, while some additional details are available from entries for other mentioned species throughout the text, but it is hard to locate some toponyms on modern maps to determine where exactly the specimens were collected.

“Kendykty Kul” is a lake, most probably somewhere between the sources of the Akalakha and Kalguty rivers⁽¹⁾; “Bukhtarma valley” — specimens were taken along the upper course of the Bukhtarma river, to the east of Berel' village, somewhere near the confluence of the Chindagatuy and Bukhtarma rivers; “Ulegem valley” is mentioned as being in Mongolia, but in the introduction it is mentioned as located somewhere between Onguday village and the Aygulak mountain range, places in the Central Altai that we cannot locate on modern maps of both the Altai and adjacent regions of Mongolia⁽²⁾.

Almost undoubtedly, *Oeneis jutta* samples from Kendykty Kul' and Bukhtarma valley represent the same population group described here as *Oeneis jutta akoene* ssp. n. – the distance between these localities, that all lie within the same orographical system, is not too long. All forementioned data suggest that *O. jutta* in the south-eastern Altai is distributed further to the south, at least as far as the southern limits of the Ukok plateau.

It is worthwhile to pay some attention to another striking feature: the most “marked” subspecies of three different *Oeneis* species, i.e. *O. jutta akoene*, *O. maga dubia* and *O. norna altaica*, coincide in the Altai section of their ranges. The two last-named taxa are often considered spersifically distinct.

Etymology

The name *akoene* is derived from Ak-Ene, the goddess-mother of ancient Altai mythology, foremother of all gods and all kinds of life.

Acknowledgements

The authors express their sincere gratitude to Dr. V. A. Lukhtanov (St.-Petersburg) for supplying unpublished information, Dr. A. V. Sviridov (Moscow) for allowing to the

¹ (present official name Kyndykty Kul' (known also as Kendikty Kul, Kandykty Kul', Khindiktyg-Khol') is a lake situated at the southern end of Chulyshmanskoye ploskogor'e (upland) at an elevation of 2500–3000 m, in Tannu Tuva Republic, Russian Federation — 50° 21' N, 89° 50' E. — *Editor*).

² (Onguday is a populated place, an administrative centre of Ongudayskiy Rayon in Altayskiy Kray, Russian Federation — 50° 45' N 86° 09' E, situated in an area close to Aygulakskiy khrebet; “Ulegem .valley” should be apparently referred to Ust'-Ulagan known also as Ulagan, an administrative centre of Ulaganskiy Rayon in Altayskiy Krai, Russian Federation — 50° 38' N 87° 58' E, situated at the confluence of the Bashkaus and Ulagan rivers; Ust'-Ulagan means “mouth of Ulagan [river or valley]”. A similar toponym is known from Mongolia: Ulangom (49° 59' N 92° 03' E), some 100 km south of the Russian-Mongolian border. — *Editor*).

collection of A. V. Tsvetaev at the Zoological Museum of Moscow University; V. K. Tuzov (Moscow) for useful information.

References

- Austaut, J. L., 1911. Lépidoptères nouveaux. — *Ent.Z.* 40: 224–225.
- Elwes, H. J., 1899. On the Lepidoptera of the Altai Mountains. — *Trans.ent.Soc.Lond.* 1899(3): 295–367.
- Elwes, H. J. & Edwards, J., 1893. A revision of the genus *Oeneis*. — *Trans.ent.Soc.Lond.* 1893(4): 457–481, pl. 15.
- Groß, F. J., 1970. Zur Systematik und Verbreitung der Arten der Gattung *Oeneis* Hübner (Lep., Satyridae). — *Mitt.münch.ent.Ges.* 58(1968): 1–26.
- Korshunov, J. P., 1972. Catalogue of Rhopalocera (Lepidoptera) from the USSR, 1. — *Ent.Obozr.* 51(1): 136–154 [in Russian].
- Korshunov, Y. P., 1996. Diurnal butterflies (sic) of the Asian part of Russia: Addenda & Corrigenda. — Novosibirsk, 66 p. [in Russian].
- Korshunov, Y. P. & Gorbunov, P. Y., 1995. Diurnal butterflies (sic) of the Asian part of Russia. Ekaterinburg, 202 p. [in Russian].
- Kurentzov, A. I., 1970. The butterflies of the Far East USSR.. — Leningrad, 164 p., 14 pl. [in Russian].
- Lee, S.-M., 1982. Butterflies of Korea. — Seoul, 125 p., 63 pl.
- Lukhtanov, V. A., 1987. A review of the Palaearctic satyrids of the genus *Oeneis* Hübner (Lepidoptera, Satyridae). II. *O. jutta* species group. — *Ent.Obozr.* 66(1): 142–158 [in Russian, English Summary].
- Lukhtanov, V. & Lukhtanov, A., 1994. Die Tagfalter Nordwestasiens. — *Herbipoliana* 3, 440 p.
- Meinhard, A. A., 1910. A list of the Lepidoptera collection obtained during professor V. V. Sapozhnikov's scientific expeditions to the south-eastern part of the Russian Altai and the adjacent remote part of Mongolia (Kobdo) in 1905 and 1906. — *Izv.imp.tomsk.Univ.* 37(4): 1–17 [in Russian].
- Murayama, S., 1973. Classification and distribution of the genus *Oeneis* Hübner in the world. — *Mushi* 29: 17–26.
- Sedykh, K. F., 1977. New species, subspecies and additions in lepidopterofauna of Komi ASSR. In: Geographical aspects of flora and fauna protection in the Northeast of the European part of the USSR. — Syktyvkar: 97–108 [in Russian].
- Standel, A. E., 1957. Lepidoptera Rhopalocera of the Altai mountains, S.W. Siberia. — *Ent.Obozr.* 36(1): 134–141 [in Russian].
- Tuzov, V. K., 1993. The synonymic list of butterflies from the ex-USSR. — Moscow, 73 p.
- Tuzov, V. K., Bogdanov, P. V., Devyatkin, A. L., Kaabak, L. V., Korolev, V. A., Murzin, V. S., Samodurov, G. D., Tarasov, E. A., 1997. Guide to the Butterflies of Russia and adjacent territories (Lepidoptera, Rhopalocera). Vol. 1. HesperIIDae, Papilionidae, Pieridae, Satyridae. — V. K.Tuzov ed. Sofia, Moscow, 480 p., 79 pl.
- Wnoukovsky, W. W., 1929–1930. Révision de quelques articles par A. Meinhard et par S. Tshougounow (S. Cugunov) à la faune des Lépidoptères des Altaï, pays de Minousinsk, monts Sajan et de Mongolie septentrionale-occidentale. — *Trudy sib.Inst.sel'skogo khoz.lesovodstva Omsk* 13(1B2): 275–285 [in Russian, French summary].